

**OC3140**  
**HW/Lab 7 Hypothesis Testing**

1. Is the sea surface temperature in September in the Gulf of Mexico significantly hotter than  $25^{\circ}C$  ? A sample of 10 days of SST was taken (sample size  $n = 10$ ). The sample mean and standard deviation are  $27^{\circ}C$  and  $2^{\circ}C$  , respectively.
  
2. A marine science equipment needs dozens uniform batteries. The manufacturer claims a variance of 0.012. Sample size = 50 batteries, sample variance=0.02. Determine if the manufacture's claim can be accepted.
  
3. The quality control requires a product from a factory to have no more than 2% defective rate. When 300 units are randomly taken from the factory, it finds that 5 of them are defective. Can the produce meet the quality control requirement? A significance level of 5% is used.
  
4. There are some temperature samples of this month in Monterey city and Marina city. The sample size in Monterey is 25 and the ample size in Marina city is 17. The sample means and variances were computed and tabulated in the following.

	Sample Size	Sample mean	Sample Variance
Monterey	25	75.5	4
Marina	17	73.3	6

Is there a significant difference of the mean temperature between Monterey and Marina cities at a significance level of 5% ?